Table of Contents

Diagnostic Equipment

Group Tester One and OPPS

Model: All

Production Date: All

Objectives of The Module

After completing this module you will be able to:

• Identify the components of the GT1.

• Demonstrate diagnostic operations using the GT1.

• Perform changes to VKM settings.

• Understand how to change batteries in the GT1.

• Understand what the OPPS Tester is used for.

• Correctly Identify the OPPS Harnesses and Connectors.

Group Tester One (GT1)

43-04-01   43-04-01

The GT1 (Group Tester One) replaces the MoDiC series of portable diagnostic tools. It has the same processor as the DISplus; a Pentium III, with 256 MB RAM and a 20 GB hard-drive. Other features include:

• DVD ROM Drive - 14 GB storage capacity

• 12.1" TFT color display, 1024 x 768 resolution

• Integrated PCMCIA card reader

• Integrated chip card reader

• Touch screen - same as DISplus

• Workshop grade case

• ASM-technology motherboard

• Temperature operating range from 35ºF to 105ºF

• 2.5 hours of operation with a fully charged battery.

• Can be powered by vehicle battery.

• Weighs 7.7 lbs.

43-04-08

Components of the GT1

1. Control Panel
2. Docking Station
3. Bench Power Unit (supplied only if no docking station has been supplied)
4. Optical Keyboard
5. LAN Control Panel Cable (Crossed)
6. LAN Control Panel Adapter (Uncrossed)
7. LAN Control Panel Cable (same design as 10.)
8. Multifunction Cable MFK 1
9. Multifunction Cable MFK 2
10. LAN Docking Station Cable (Same Design As 7.)
11. Touch Pen
12. Diagnostic Cable - OBD

13. Diagnostic Head
14. LAN Diagnostic Head Cable
15. Diagnostic Cable - 20 pin BMW
16. Vehicle Battery Adapter Cable
17. Size 2 Adapter
18. Ammeter Clip 50 A
19. USB/Centronics Adapter
    (Not Shown, available from
     specialized dealers)

Control Panel

The control panel is the central component of the GT1. The operating system and the application programs are stored here.

Located on the front of the Control Panel:

- PCMCIA interface (radio card slot in left handle)

- Monitor with touch capabilities

- Control Block

- Battery Compartment (in right handle)

43-04-09

Monitor

The surface of the monitor is covered by a touch-sensitive plastic sheet that senses the pressure of a finger or the touch pen and transfers it to the system.

Note: Use only your finger or the touch pen supplied to operate the touch screen. If other objects are used, it may damage the GT1 Screen.

Control Block

The main control block of the GT1 control panel is located under the center of the touch-screen. It consists of 1 on/off switch, 3 LEDs and the infrared receiver port. The infrared port is the connection to the wireless keyboard used during programming.

The On/Off switch is used to switch the control panel on and off or to initiate a forced switch-off. If a fault occurs that causes the unit to "lock-up", you can shut down the unit by holding down the on/off button for 5 seconds. This may cause the loss of operating software, necessitating a reinstall (use only in an emergency).

The status of the switch does not affect the charging operation.
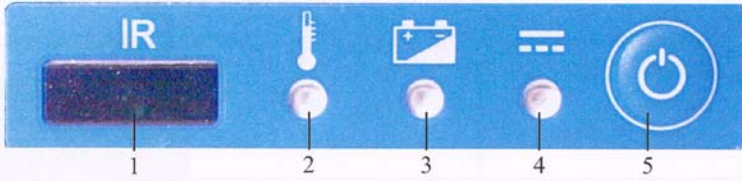
1. IR Interface
2. Temperature LED
3. Battery LED
4. Operation LED
5. ON/OFF Switch

43-04-10

The "temperature" LED will glow red when the control panel is overheated. The control panel will shut down approximately 10 seconds later. See the Owner's Manual for restart procedures.

The "battery" LED will glow yellow during charging. It will switch off to signify the battery is fully charged. It will flash yellow if excessive temperatures continue.

The "operation" LED will glow green when using an external power source, glow orange when using the internal battery. A flashing orange LED signifies a discharged battery.

Alternately flashing orange/green LED denotes that the internal battery is defective or has been removed.

Control Panel Connections

TOP
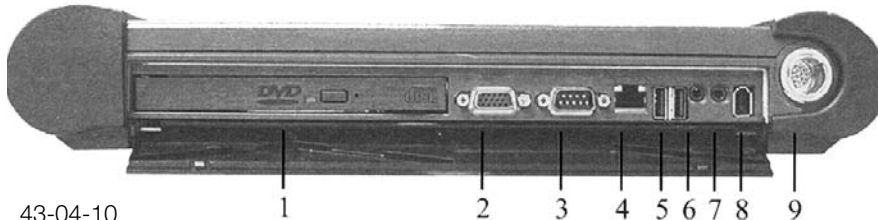
43-04-10

1. DVD drive - DVD and CD-ROM compatible
2. VGA - external monitor connection
3. COM - future application
4. LAN - network or diagnostic head connection
5. USB (2) - future applications (approved PostScript printer)
6. Audio in - microphone
7. Audio out - speakers or headphones
8. Firewire - multimedia functions, future applications
9. Base Measurement - MFK 1 and MFK 2 or
   External power supply from vehicle electrical system

Bottom

43-04-12

1. Docking station interface
2. Bench power supply connection.
   An optional power supply when not
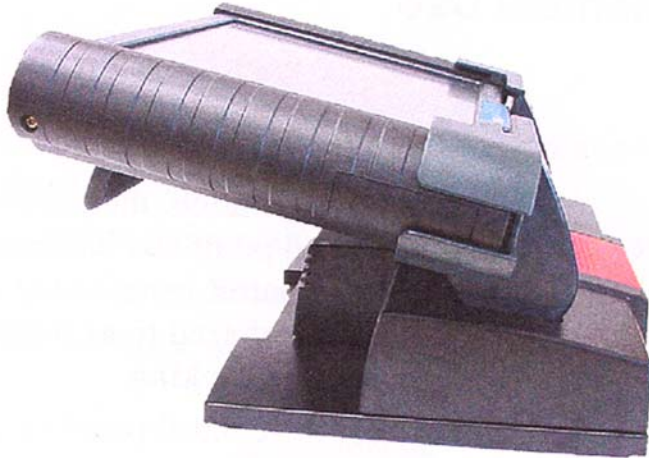   using the docking station

Power Supply

The control panel is supplied power from one of three voltage sources:
• Internally from the battery (approximately 2.5 hours of operating time).
• Externally from the bench power unit or the docking station.
• Externally from the vehicle electrical system.

DVD Drive

The DVD Drive is accessible from the top of the control panel. It accommodates DVD's and CD-ROM's for installing programs, applications or updates of the control panel.

Note: When you open and close the DVD drive the control panel must be in the 14° inclination position as shown, otherwise the drive tray or the disc may be damaged.

Do not use the DVD unless the control panel is attached to the docking station.
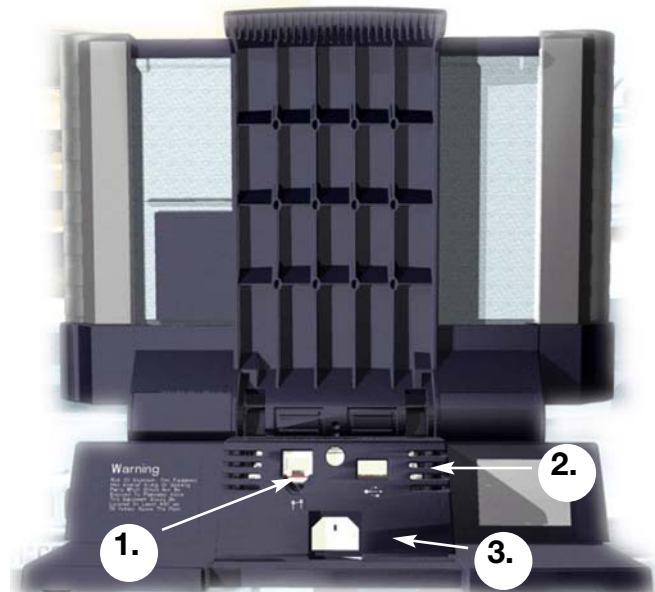
43-04-13

Docking Station

The Docking Station is intended for stationary operation, it replaces the bench power unit and provides the power supply. The Docking Station also provides the interfaces for connection to a USB device and the LAN Network.
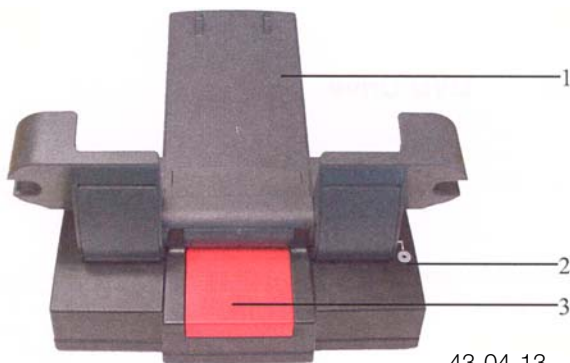
43-04-13

1. Docking interface for the Control Panel
2. Hinge - used to change viewing angle
3. Hinge Release

43-04-01

1. LAN connection
2. USB port
3. Power cord

Bench Power Unit

As an alternative to the docking station, the bench power unit may be used to power the control panel. The bench power unit consists of the built in connecting cable on the control panel, the power unit itself and a separate power cable. *When the control panel receives power from the bench power unit, the internal battery is simultaneously charged.*
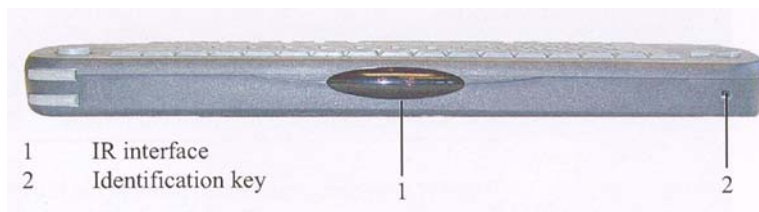
Optical Keyboard

43-04-27
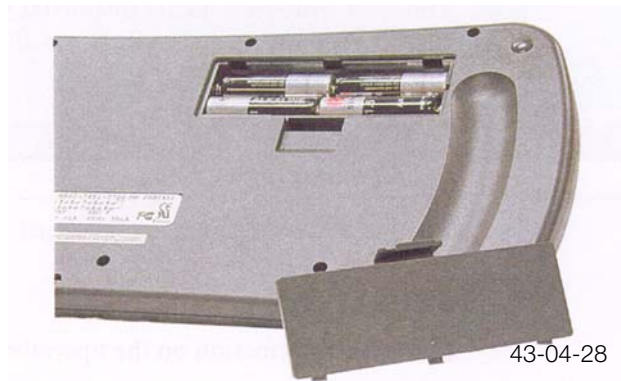
43-04-28

The keyboard uses an Infrared link to communicate with the GT1 control panel. It is used only for service programs and can not be used in place of the virtual keyboard of the control panel. The keyboard must always face the control panel when in use and must be less than 1 meter away from the control panel (IR). The keyboard uses 4 AA batteries as an internal power supply.

Caution: Old batteries can leak and damage the keyboard. Always keep fresh batteries in the keyboard (or remove when not in use).

1   IR interface
2   Identification key

43-04-33

If more than one GT1 is in use in the workshop, the optical keyboard should be configured to a specific GT1 control panel as follows:

1. Press and hold the identification key while pointing the keyboard at the control panel.
2. Press a numeric key, 0-7 on the keyboard. The control panel will now respond only to commands from that keyboard.

If necessary the identification can be changed at any time following the above instructions.

LAN Control Panel Cable (Crossed)

The LAN control panel adapter (crossed) is approximately 30 cm long with a RJ45 connector and a RJ45 socket. It is identified by a black (yellow on early units) stripe near the socket and a label reading **"LAN Adapter BT X."**

LAN Cable Crossed   43-04-20
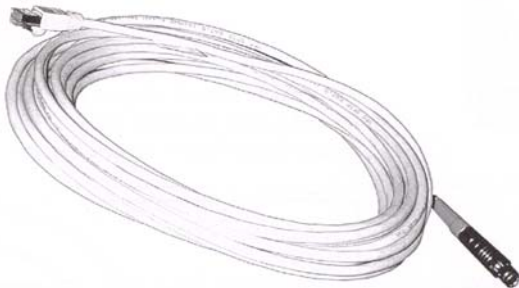

LAN Cable Uncrossed   43-04-19

LAN Control Panel Adapter (Uncrossed)

The LAN control panel adapter (uncrossed) is approximately 30 cm long with a RJ45 socket and a RJ45 connector. It can be identified by a gray stripe near the socket and a label reading **"LAN Adapter 1:1."**

LAN Control Panel Cable

The LAN diagnostic head cable is 10 meters long and has a RJ45 connector and an orange plug connector.

The LAN docking station cable is of the same design.

43-04-22

MFK1 and MFK2

The MFK1 and MFK2 cables function similar in operation to the DISplus. Only one cable, either MFK1 or MFK2 (visual markings) may be connected to the control panel at one time.

MFK1   43-04-25

MFK2   43-04-26

Touch Pen

The Touch Pen is an ergonomic operating aid for the touch screen that makes it easier to operate the displays.

Diagnostic Cable

The Diagnostic Cable is used to connect the diagnostic head to a vehicle with the 20 pin underhood connector. The cable consists of the 20 pin connector, the cable and the 21 pin plug for connection to the head (bottom left).
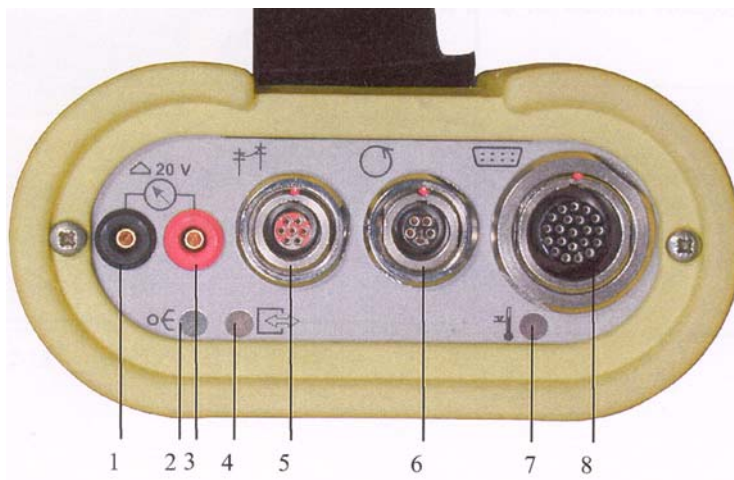

43-04-18

43-04-17

OBD Diagnostic Cable

The OBD Diagnostic Cable is used to connect the diagnostic head to the OBD II diagnostic connector (upper right).

Diagnostic Head

The Diagnostic Head enables operation of the diagnostic interface via either radio or cable communication.

1. Connection for Voltage Measurements
2. LED 1 (Power)
3. Connection for Voltage Measurements
4. LED 2 (Status)
5. Connection for LAN Cable
6. Connection for TD Cable
7. LED 3 (Excess Temperature)
8. Connection for Diagnostic or OBD Cable

43-04-15

LED 1 Green	LED 2 Yellow	LED 3 Red	Function	Remarks
ON	ON	ON	Initialization	Recorder Button Green
ON	OFF	OFF	Power Up	
ON	Flashing	OFF	Standby	
ON	ON	OFF	Connected	
Flashing	ON	OFF	Self Test or Update	
		Flashing	Excess Temperature	Fault
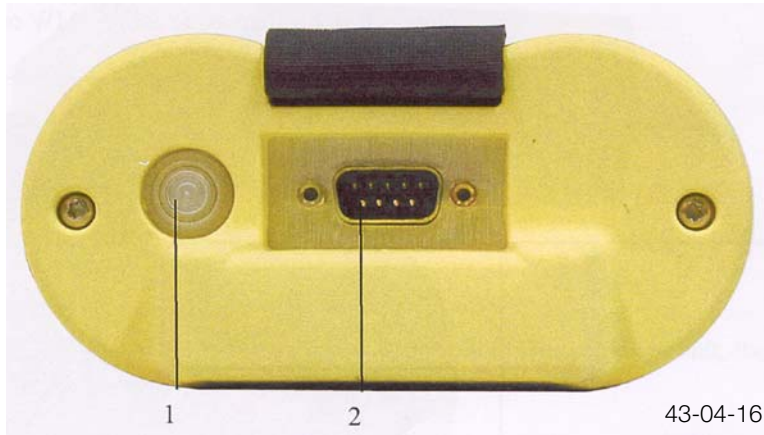
1. Recorder Button (For Future Use)
2. Nine Pin Interface (For Future Use)

43-04-16

Optional Cables

43-04-29

Vehicle battery adapter cable - to use while in vehicle, **does not charge the internal battery.**

43-04-30

50A Ammeter clip and adapter to bring the GT1 current measuring to DISplus standard. Requires the use of the size 2 adapter.

43-04-31

The size 2 adapter. It connects the 50 A ammeter clip to the control panel.

USB/Centronics Adapter

A USB/Centronics adapter may be used to connect one of the recommended PostScript printers to the control panel or docking station to serve as a local printer.

Battery

Power is supplied by the integrated battery when the control panel is not connected to an external power source. The battery must be charged to insure uninterrupted use of the control panel as a mobile test unit. The battery is charged automatically as soon as the control panel is placed in the docking station or connected to the bench power supply. *Charging time is approximately 2 hours* and while the battery is being charged the "Battery" LED illuminates in yellow.

To achieve the longest possible service life for the integrated battery, it must be fully charged, then discharged for normal use. Once a month the battery should be "formed" which entails fully discharging the battery, then fully recharging it. To "form" the battery:

• Disconnect the bench power unit from the control panel or undock from the docking station or disconnect the docking station from a power source.

• Fully discharge the battery, by leaving the control panel "ON" until all the LEDs are out.

• Dock the control panel or supply power to the docking station or connect the bench power unit.

Charging is complete when the "Battery" LED goes out.

Note: Always replace a defective battery with a new battery. Never operate the control panel with out a battery (it acts as a buffer). Sudden interruption of power my cause the control panel to loose the installed operating system.

Replacing the Battery

1. Switch off power and undock control panel.

2. Remove screw on right hand handle.

3. Pull off handle.

4. Remove battery.

5. Press down on the retainer for the connector and carefully remove connector.

6. Connect new battery.

7. Insert new battery in handle.

8. Reinstall handle on control panel.
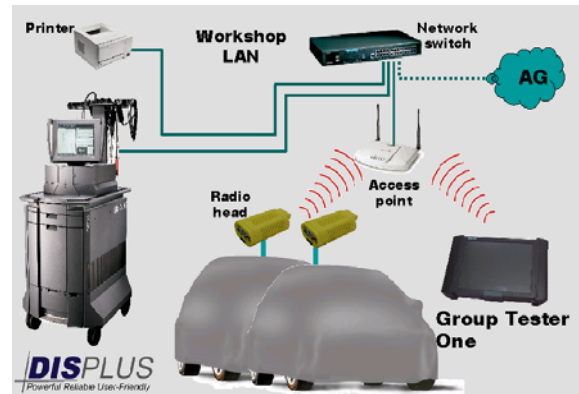
9. Completely charge new battery.

43-04-34

Operation

Currently the GT1 will operate only when hardwired to the diagnostic head. Software upgrades are planned for this year which will give the GT1 wireless (RF) capabilities. Further upgrades will include full network capability and a measurement kit.
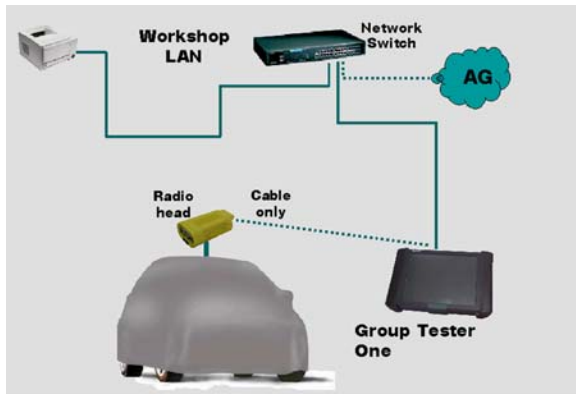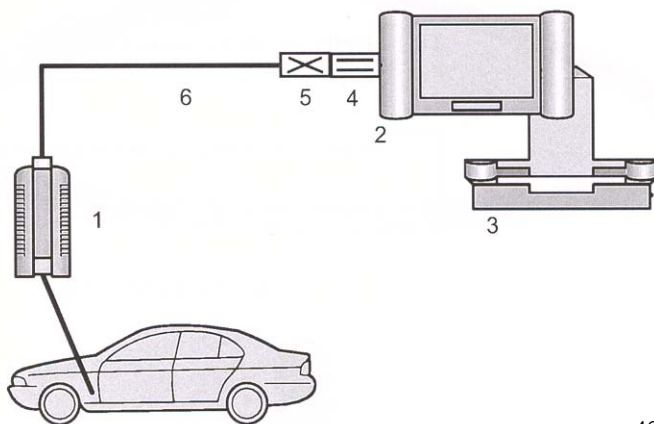

43-04-21

43-04-02

For hardwire connection three cables must be used:
 • LAN control panel adapter UNCROSSED
 • LAN control panel adapter CROSSED
 • LAN Diagnostic head cable

The three cables MUST be connected in the particular order shown below.

1. Diagnostic Head
2. Control Panel
3. Docking Station
4. LAN Control panel adapter UNCROSSED
5. LAN Control panel adapter CROSSED
6. LAN Diagnostic Head Cable

43-04-03

Note: Never connect the LAN Diagnostic Head Cable without the LAN adapter cables.

Use of the GT1 for diagnosis is functionally the same as the DISplus.

Refer to the SIEMENS operating manual shipped with the GT1 for additional information.

Control Panel Faults

Symptom	Possible Causes	Remedy
The system "crashes"; the hourglass no longer changes back to the cursor arrow; no operation possible	Internal Fault	If 'normal' switch-off not possible, use a forced switch-off (press the on/off switch for approx. 5 seconds) to switch the control panel off and on again.
With the control panel docked, the "Operation" LED lights up orange.	Docking station power supply is interrupted. Control Panel is not supplied with power via the docking contact.	Check whether power is present. Insert the power plug correctly. Check the spring contacts for dirt or foreign objects. To set up a correct connection, undock and then redock the control panel tow or three times (also see Section 7.3). If no faults can be determined, send a Fault Report Fax.
"Temperature" LED lights up red; control panel switches off.	Excess internal temperature circuit breaker activated.	Move the control panel to a cooler room and allow it to cool down adequately. Switch the control panel on again. If the "Temperature" LED flashes yellow without the presence of high ambient temperature, send a Fault Report Fax.
"Battery" LED flashes yellow for 10 seconds on startup; control panel does not start.	After the control panel shuts itself off, there is still excess temperature.	Move the control panel to a cooler room and allow it to cool down adequately. Switch the control panel on again. If the "battery" LED flashes yellow without the presence of high ambient temperature, send a Fault Report Fax.
System does not power up completely; gets 'stuck' with an error message.	Internal run error	Switch the control panel off (press the on/off switch for 5 seconds = forced switch off) and then on again. If the system still freezes, you must reinstall the Base CD in accordance with Section 3.5.3. If this fault occurs repeatedly, send a Fault Report Fax.
After complete discharge and docking at the docking station, the system does not power up.	Profound discharge of the battery.	After a profound discharge and docking at the docking station, you must wait approx. 3 minutes before the system can be powered up

Note: The power supply to the control panel cannot be measured at the open docking contact because the power is through-connected via a proximity switch only when the control panel is docked.

Caution: Forced Switch-Off may be used only in the case of special faults. Continued use of this feature may cause operating system failure and device shut down. Normal shut off is performed by pressing the ON/OFF switch for 2 seconds

Touch Screen

Symptom	Possible Causes	Remedy
The cursor does not respond (does not follow finger contact).	Touch controller defective or system 'crashed'.	Switch the control panel off (press the on/off switch for 5 seconds = forced switch-off) and then on again. If the fault persists or occurs more frequently, send a Fault Report Fax.
The touch screen remains dark; no error message by means on LED.	Touch screen is in the energy-saving mode. Backlighting failure.	Not a fault. The screen image reappears when the touch screen is touched. If you glance sideways at the touch screen, you can detect vague characters. Send a Fault Report Fax.
The cursor arrow is not located beneath the point of touch (touch offset)	Touch the controller set incorrectly.	The touch controller must be calibrated in the "Administration" window. Press the "Calibrating touch screen" button, enter the password and follow the instructions that are displayed. If this does not eliminate the problem, send a Fault Report Fax.
Incorrect pixel colors	Individual transistors defective.	Individual pixels of incorrect colors are tolerable. If the entire screen rows or columns are incorrect, send a Fault Report Fax.

Important: Use only your finger or the touch pen to operate the screen.

Plug-in Connections

Symptom	Possible Causes	Remedy
50 A ammeter clip cannot be connected	Connectors on the ammeter clip do not fit in the socket.	Use the size 2 adapter
Cable connection via LAN interface to diagnostic head interrupted	Plug-in connections on LAN adapter defective	Check that the plug-in connections are correctly seated and undamaged. Check whether the plug-in connection via the LAN control panel adapter (uncrossed) has been established.

Important: Never use force to insert the connectors. The connectors on the measuring and diagnostic cables are marked with a red dot that must be aligned with a corresponding dot on the socket.

Printer

Symptom	Possible Causes	Remedy
Local Printer does not print	Printer connected to docking station, control panel undocked. Printer is defective.	Dock the control panel or insert the USB cable on the printer in the control panel. Check that the connection is correctly seated. In the "Administration" window, press the "Self-test" button and select the "Printer connection" function from the menu displayed. The printer should print a page with the heading "PS". If this does not occur, check the cable connection to the printer.
Network Printer does not print.	Network printer connected via LAN cable to docking station; control panel undocked. Radio link to diagnostic head established Cable link to diagnostic head established. Printer Defective.	Dock the control panel. Disconnect the cable connection to the diagnostic head and established a connection to the network printer in accordance with Section 4.4.8. Disconnect the cable connection to the diagnostic head and established a connection to the network printer in accordance with Section 4.4.8. In the "Administration" window, press the "self-test" button and select the "printer connection" function from the menu displayed. The printer should print a page with the heading "PS". If this does not occur, chack whether the correct IP address for the printer is entered in the "Administration – Network configuration" window.

Accessories

Symptom	Possible Causes	Remedy
No measurements possible with MFK1.	Measuring head defective.	In "Administration", run a self-test of the MFK1. If an error message is issued regarding the measurement system or measuring cable, send a Fault Report Fax.
No measurements possible with MFK2.	Measuring head defective.	In "Administration", run a self-test of the MFK2. If an error message is issued regarding the measurement system or measuring cable, send a Fault Report Fax.
No input possible via the optical keyboard.	No IR connection possible or batteries discharged.	Check whether the transmit and receive windows of the infrared connection are covered. Change the distance between the devices. Replace the batteries in the optical keyboard. If no connection can be set up, send a Fault Report Fax.

Diagnostic Equipment

Docking Station

Symptom	Possible Causes	Remedy
No power supply to the control panel ("Operation" LED does not light up in green on docking when switched on).	No power supply or power supply plug disconnected.	Insert the power supply plug. Press the on/off switch.
	Docking contacts dirty	Carefully clean the contacts on the docking station with a lint-free cloth.
	Foreign object prevents the perfect seating of the plug-in contacts.	Remove the foreign object.
	Proximity switch is defective, does not through-connect power.	Send a Fault Report Fax
	Power supply unit defective	Send a Fault Report Fax
	LED defective	Send a Fault Report Fax
"Battery" LED does not light up orange when switch off.	Battery is fully charged.	Not a Fault.
	Docking contacts dirty.	Carefully clean the contacts on the docking station with a lint-free cloth.
	Power supply unit defective.	Send a Fault Fax
	LED defective.	Send a Fault Report Fax

Fault Codes

Codes	Fault Group
000	System error from UNIX operating system
100	Fault in the measurement system, internal
200	Fault in the EDIC application
300	Fault in the system technology
400	Fault in the TOROS application
500	Fault in the measurement system application
800	Run error
900	Internal error

Diagnostic Head

Symptom	Possible Causes	Remedy
No connection possible (LED 1 on diagnostic head is dark).	No Power supply of the diagnostic head via vehicle electrical systems.	First check the plug-in contact on the BMW or OBD diagnostic cable and its connection to the vehicle. Switch on the ignition. If the LED still does not light up, send a Fault Report Fax.
Connection to the diagnostic head not possible or faulty (LED 2 flashes yellow); no diagnostic head is recognized (see "Administration, Diagnostic Head Allocation" window). The diagnostic head cannot be connected.	Interference due to excessive distance from the vehicle; in the case of radio link, may also be due to external radio sources or absorption. Diagnostic head software defective. Incorrect IP address when the diagnostic head was changed. Radio card in the diagnostic head defective. Radio card in the control panel is defective.	Check the correct connection of the cables at the diagnostic head. Change the location of the diagnostic head and, if necessary, of the control panel. If this does not remedy the fault, change the connection type. If there is still no connection, send a Fault Report Fax. Perform a reinstallation in accordance with Section 7.7 Check the IP address in the "Administration, Network configuration" window. If possible, use the second diagnostic head to check the radio link. If the connection can be established, the card in the first diagnostic head is defective. Send a Fault Report Fax. If possible, use the second diagnostic head to check the radio link. If no connection can be established with this head either, the card in the control panel might be defective. Using a suitable tool (such as a screwdriver), pry the cover off the radio card slot in the left handle of the control panel (see fig. 7.1); you will then se one green and one yellow LED on the radio board. If the green LED is lit, the radio board is OK. If the yellow LED is flashing rapidly, data transmission is being formed correctly. If the LEDs are in any other state, send a Fault Report Fax.
LED 3 Flashing Red	Interior temperature of the diagnostic head is too high.	Terminate the diagnosis. Terminate the connection and allow the diagnostic head to cool adequately before using it again.
LED1 flashing rapidly	General fault in the diagnostic head.	Send a Fault Report Fax.
"Recorder" button on the back lights up in green.	Only while booting.	Not a Fault. This button has not function at this time.

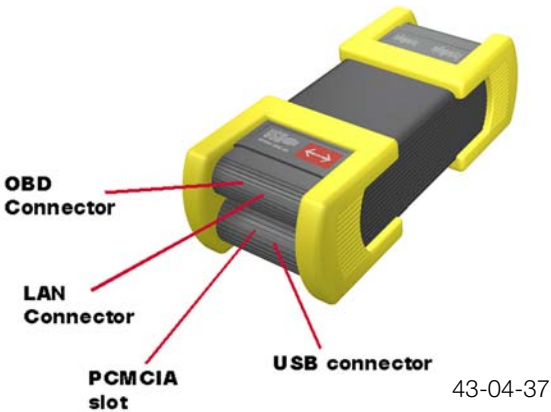## Optical Testing and Programming System - OPPS

43-04-35

OPPS (Optical testing and Programming System) is a device that may be used instead of the Diagnostic Head as a vehicle interface for either the *DISplus or GT1*. When used, it replaces the Diagnostic Head. OPPS was developed to reduce the amount of time required to program E65/E66 MOST control modules by 30-60% and to diagnose the Fiber Optic communication systems MOST and Byteflight. OPPS can be connected into the MOST bus and the OBD connector simultaneously.

Refer to E65 CIP PROGRAMMING SETUP below, for details on how to connect and make use of OPPS for CIP programming. Each OPPS unit will have the Network settings for your service workshop configured when you receive it. API International has been contracted to perform this service:

- No loading or configuring necessary upon receipt of the OPPS.
- Report any problems to API @ (800) 527 - 4872 ext. 232.

Note: For additional details and updated information, refer to SI #B07 03 02. OPPS is delivered with newer operating software than is available through the DISplus/GT1. Do not under any circumstances perform an OPPS software update available in "Connection Setup" or if automatically prompted by the DISplus/GT1 software until CD32. If an update is performed before CD32 the OPPS will be non-operational and must be returned for repair.

All OPPS units remain the property of BMW of North America LLC. Centers may not sell, transfer or assign any third party to use the OPPS and its software.

OBD Connector
LAN Connector
PCMCIA slot
USB connector

43-04-37

MOST Adapter
Byteflight Adapter

43-04-36

OPPS SPECIFICATIONS:

- 200 MHz Pentium processor
- 32 MB flash and RAM
- DK LAN connection
- USB connection
- MOST bus connection
- Byteflight connection
- OBD connection
- Supports all model series
- **No RF communication possible.**

INCLUDED WITH OPPS:

- OPPS unit
- Assorted fiber optic test cables
- 2 Owners manuals (device and cables)
- Fiber Optic test loop device
- 2 Carrying cases
- 2 OBD cables

Cabling Setups:

There are 2 different cabling setups that are addressed in this section. Each is used for E65/E66 programming and MOST/Byteflight diagnosis. Each OPPS will require 1 Network IP address and 1 wall mounted LAN receptacle. API has acquired the additional IP address (es) for each center.

If upon receiving your OPPS the workshop has a sufficient number of LAN receptacles, use cable setup #2. If the workshop does not have a sufficient number of wall mounted LAN receptacles, use cable setup #1. The following is an overview of the 2 different cabling setups.

1. Cable setup #1 This setup should be used if the OPPS is operated independent of the workshop network.

2. Cable setup #2 This setup should be used if the OPPS is operated on the workshop network.

Cable Setup #1 - To be used if the network is not operational (using GT1)

This setup may be used temporarily if the network is not operative, there are not enough LAN wall drops or network IP addresses are in conflict. The vehicle is direct wired to the OPPS and the GT1, which is direct wired to the printer via the USB A/B cable (1 piece supplied to every center with the first GT1 delivered). The USB printer cable can stay attached to the printer even if the printer is working on a network. The printer configuration must be changed to "Local printer" in the GT1.

Note: This setup requires a direct USB cable connection to the printer. This greatly limits GT1 mobility and will not allow the update of diagnostic programs via the network, which will be available as of the third quarter of 2002. It should only be used as an exception for the reasons stated above. This setup may also be used for E65/E66 programming.

GT1 Wired to OPPS (Setup #1)
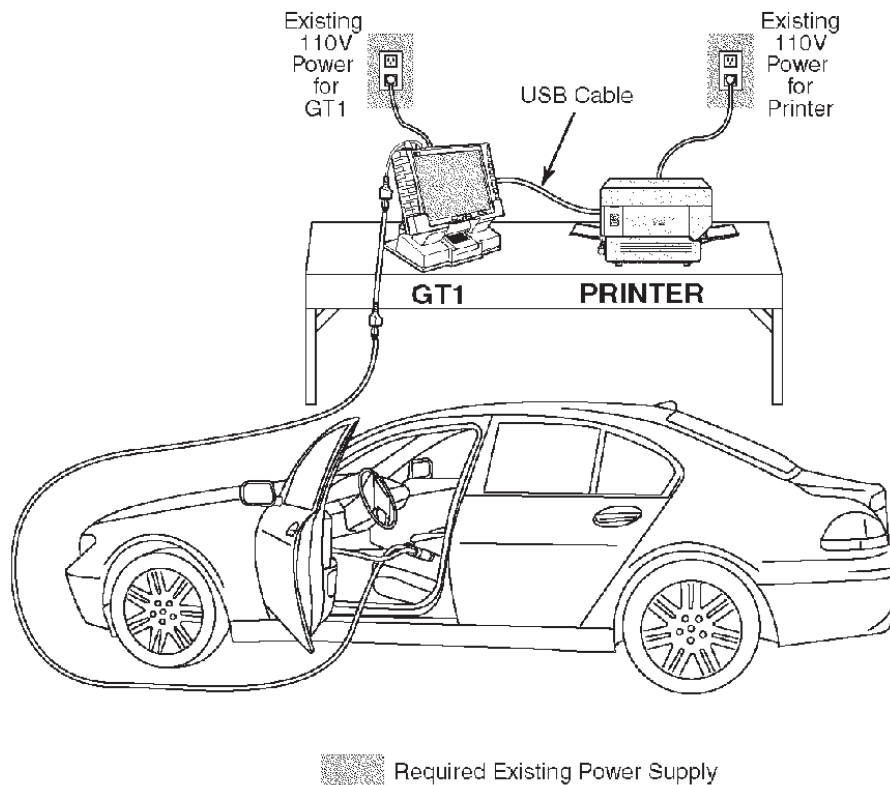
S07 02 U06

For this setup you will need the following cables:
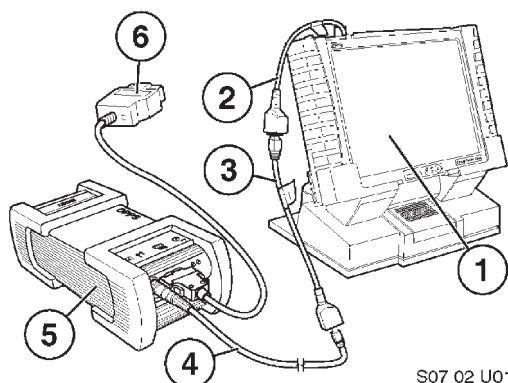
S07 02 U01

• Straight adapter marked "LAN adapter BT 1:1" (2)

• Cross over adapter marked "LAN adapter BT X" (3)

• DK LAN cable marked "LAN Kabel DK" (4)

• Short OBD cable for OPPS P/N 663 111 (6)
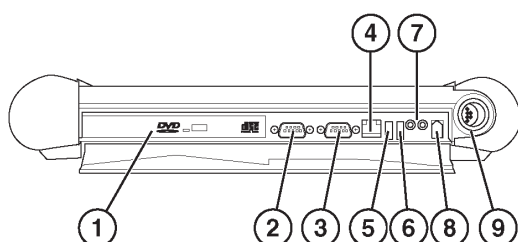

S08 02 U11

1. Attach the straight adapter to the control panel LAN connector (4).

   Note that the straight adapter stays attached to the GT1 regardless of which cable setup is used.
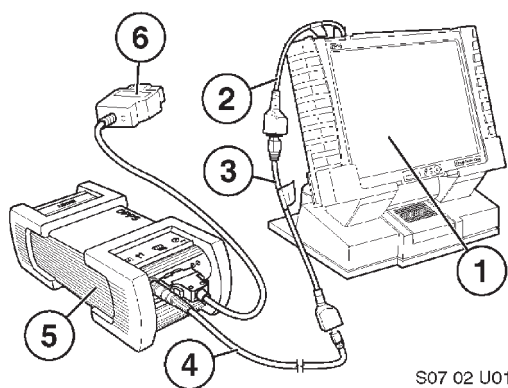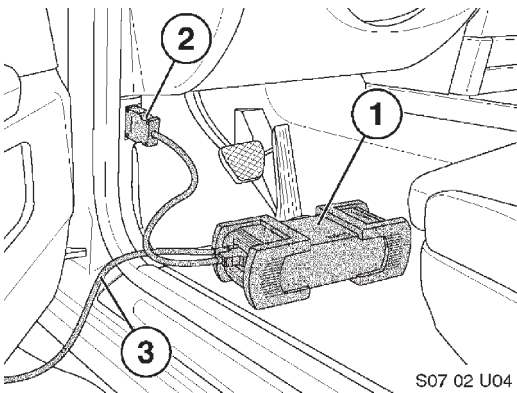

S07 02 U01

2. Attach the cross over adapter (3) to the free end of the straight adapter (2).

3. Attach the DK LAN cable (4) to the free end of the cross over cable (3).

4. Attach the free end of the DK LAN cable (Orange connector) to the OPPS (1 below).

5. Attach the chrome connector end of OBD cable (short) 663 111 to OPPS connector (2). This OBD cable is used for diagnosis and for CIP programming.

6. Establish communication with the vehicle via the usual procedure. OPPS takes slightly longer to perform the "self test" than the DISplus/GT1 head.
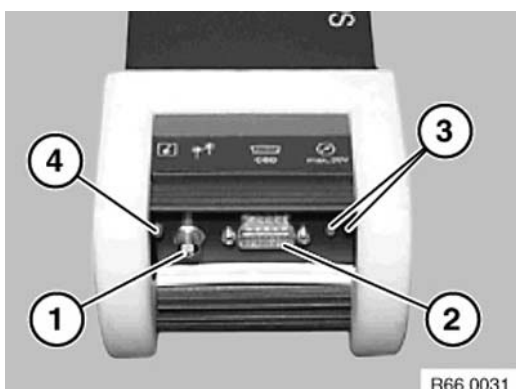
R66 0031
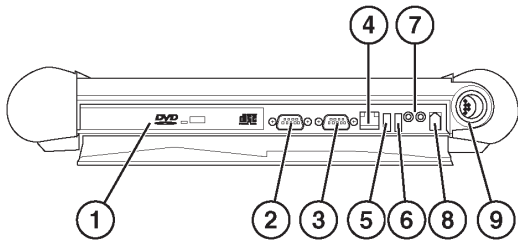
Printer connection - at this time the printer is connected to the GT1 via the USB connector on the control panel (6).

Note: Do not connect the USB connector to the docking station USB connection. The docking station printer interface software is not operational at this time.

S08 02 U11

Cable Setup #2 - To be used if the workshop network is operational (using GT1)

Fiber Optic Module & Harness Testing Via LAN (Setup #2)
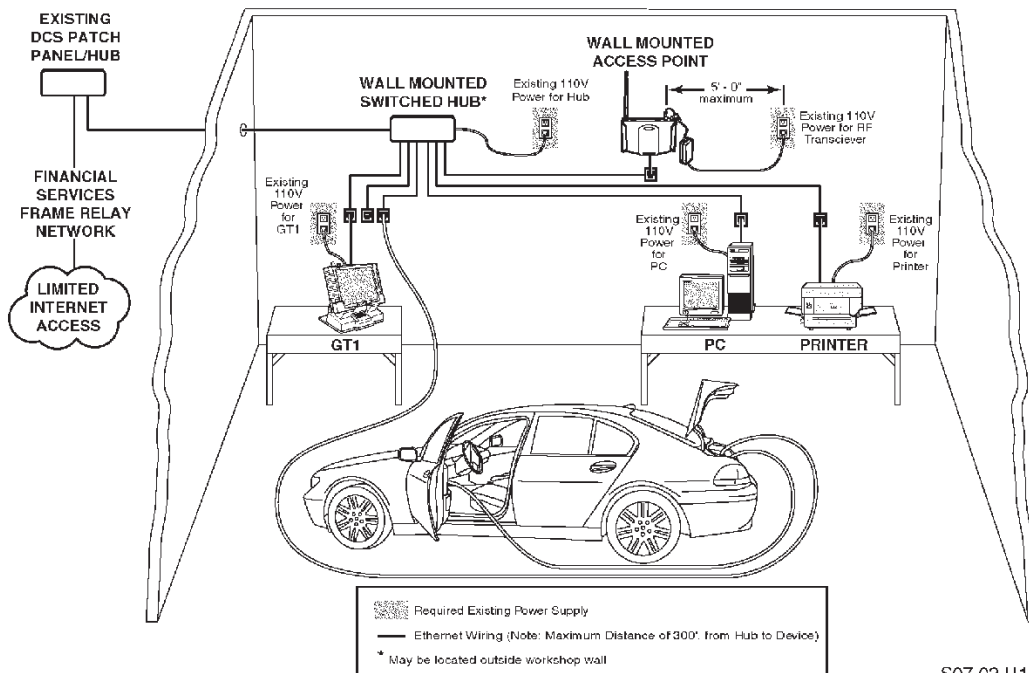
S07 02 U13

The GT1 and the OPPS are attached to wall LAN lines. Printing works via the network printer.
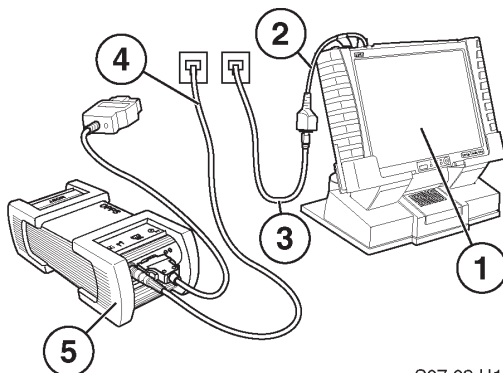
For this setup you will need the following cables:

- Straight adapter marked "LAN adapter BT 1:1"(2)

- Straight LAN cable marked "LAN Kabel SE"(3)

- Short OBD cable for OPPS P/N 663 111 (5)

- DK LAN cable marked "LAN Kabel DK" (4)

S07 02 U14

Instructions
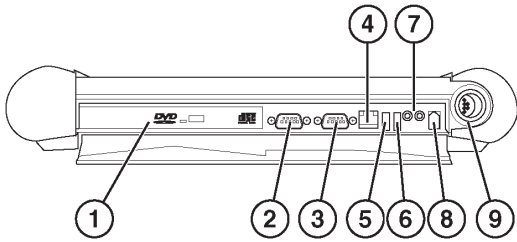
S08 02 U11

1. Attach the straight adapter to the control panel (4) LAN connector.

   Note that the straight adapter stays attached to the GT1 regardless of which cable setup is used.
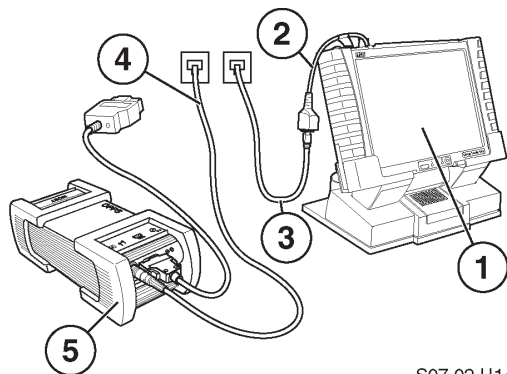
S07 02 U14

2. Attach the straight LAN cable SE (3) to the free end of the straight adapter.

3. Attach the free end of the straight LAN cable SE to an open LAN connection on the wall.

   Wired wall LAN connections should have a number/letter combination on them.

   This number will also be on the connection where the switching hub is located.

S07 02 U04

4. Attach the OPPS to the vehicle using the short OBD cable P/N 663 111 (2).

5. Attach the DK LAN cable to the OPPS (1).

6. Attach the chrome connector end of OBD cable (short) 663 111 to OPPS connector (2). *This "short" OBD cable is used for diagnosis and for CIP programming.*

   The "long" OBD cable 663 112 is used for testing optical bus systems only. The "long" OBD cable 663 112 only transmits at a baud rate of 10400 compared to the high speed 115K baud rate for 663 111.
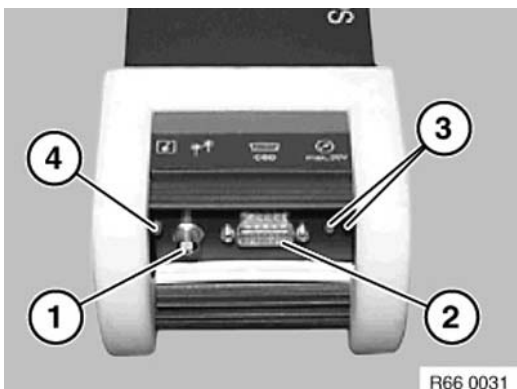
R66 0031
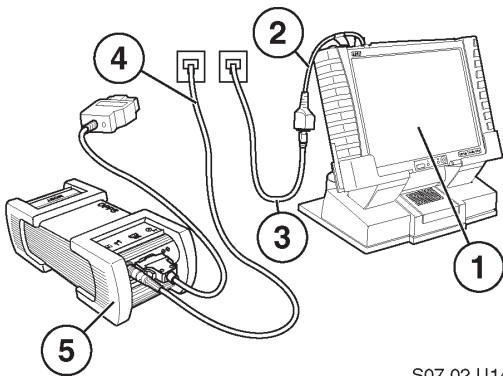
S07 02 U14

7. Attach the free end of the DK LAN cable (4) to a LAN connection on the wall. Wired wall LAN connections should have a number/letter combination on them.

   This number will also be on the connection where the switching hub is located. Before attaching this line to a wall LAN line make sure that the other end of the line is attached to the switching hub.

8. Establish communication with the vehicle via the usual procedure. OPPS takes slightly longer to perform a "self test" than the DISplus/GT1 head.

OPPS CONNECTIONS
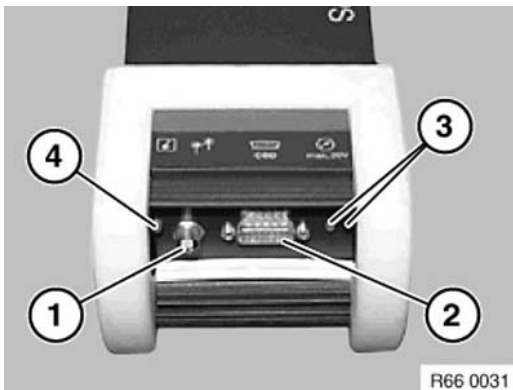
R66 0031

OBD & Network Connection

• OBD connection (2)

• DK LAN connection (1)

• 2 color LED (4)

   1. Green- flashing OPPS is free,

   2. Green solid OPPS is connected.

   3. Green rapid flash Software update active

   4. Orange self test active or fault

• External voltage testing (3)
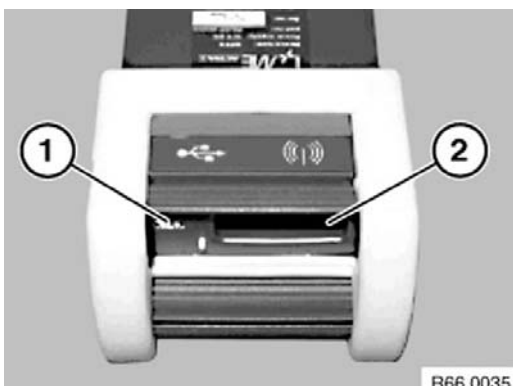
R66 0035

USB and Card connection

• These connections are not in use at this time and should not be used.
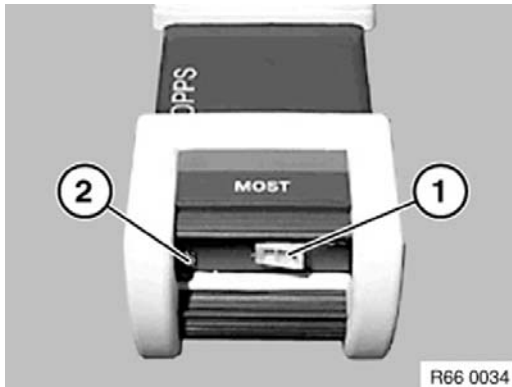
R66 0034
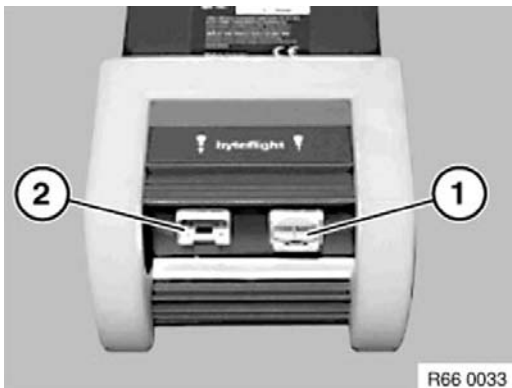
MOST Connection

MOST bus test cables and programming cable attach to this connector (1). *The white protective cap should be replaced after use to keep the fiber Optic connections clean.*
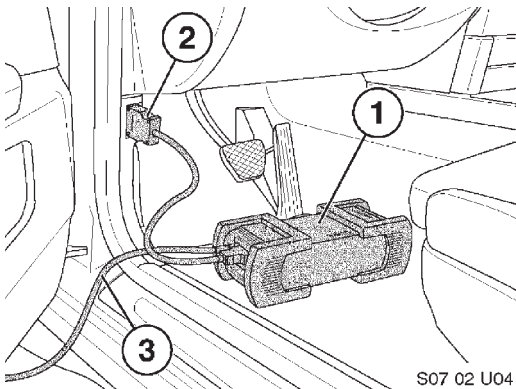
LED (2):

Red LED = voltage is supplied

Yellow LED = accessing MOST bus

Green LED = Bus lock

Byteflight Connection

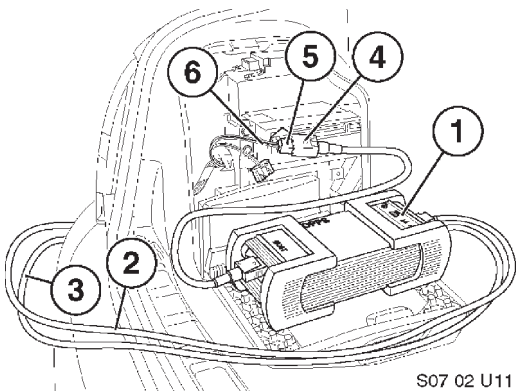• Test connection (2)

• Reference connection (1)

R66 0033

OBD CONNECTIONS

S07 02 U04

As stated earlier, OPPS comes with 2 OBD cables:

"Short version" P/N 663 111 which is used for CIP programming through the OBD (2) and MOST bus as well as diagnosis of all E65/E66 modules.

S07 02 U11

"Long version" P/N 663 112 (2) which is used for Optical module and bus testing of modules located a distance from the vehicle OBD connector such as in the vehicle trunk.

The long OBD cable 663 112 only transmits at a baud rate of 10400 compared to the high speed 115K baud for 663 111.

E65/E66 CIP PROGRAMMING SETUP
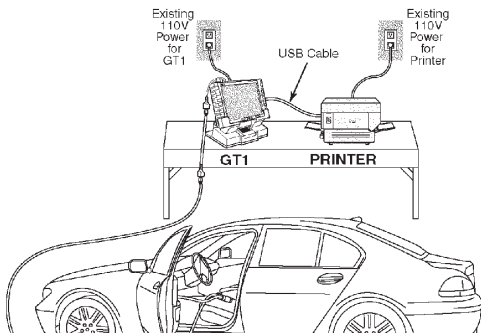
Attach the OPPS and GT1 in accordance to Cabling setup 1 or 2.

• Attach the MOST bus programming cable (663 121) to the OPPS MOST connection (1).

W66 3 121

R66 0034

S07 02 U05
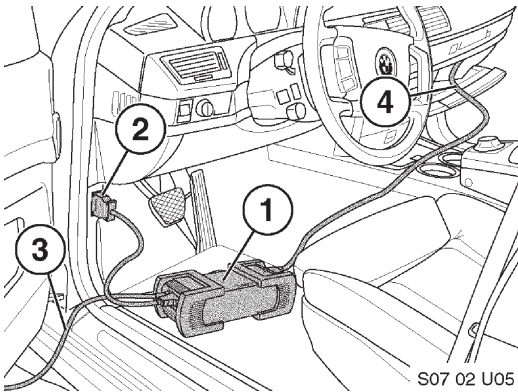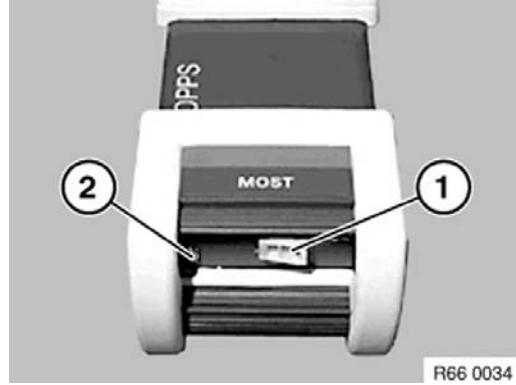
• Run the MOST bus cable to the glove compartment (4).

GT1 Wired to OPPS (Setup #1)

• Pull down the trap door inside the glove com partment

• Disconnect the MOST bus interface (1)

• Plug the MOST bus harness (2) into the MOST programming cable (3).

Notes: _____

_____

_____

E65/E66 OPTICAL BUS AND HARNESS TESTING SETUP

Attach the OPPS and GT1 in accordance to Cabling setup 1 or 2. Follow the directions in the Diagnostic program test module. The following is an example of how to test the SVS module and the SVS fiber optic harness.
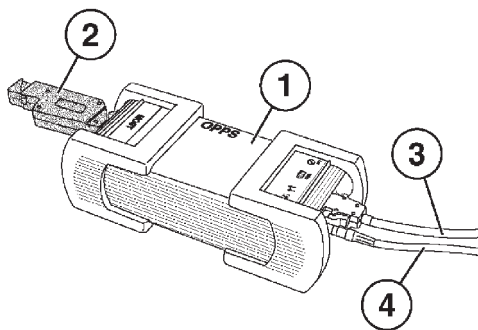
Note: Always consult the "Operating Instruction" books supplied with the OPPS and the "Functional Description" section in the DISplus/GT1 Test Modules for complete testing instructions.

W66 3 122

W66 3 123

• For SVS Optical *CM testing* you will need Control module cable (663 122)
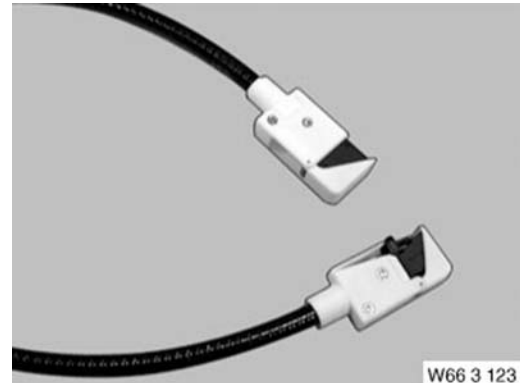
*OR*

• For SVS Optical CM *harness testing* you will need Control module harness cable (663 123)
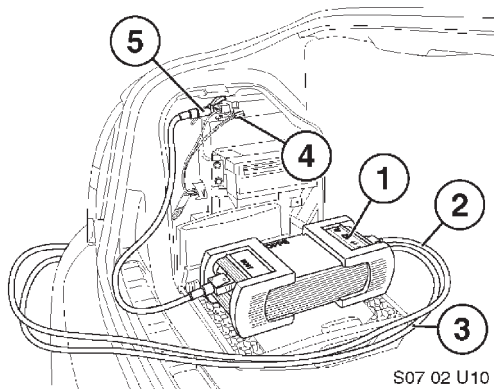

S07 02 U07

• Attach the Long OBD cable (3) to the OPPS

• Attach the DK LAN cable (4) to the OPPS

• During the Test module you will be instructed to attach the MOST test loop P/N 663 124 (2) to the OPPS as illustrated.
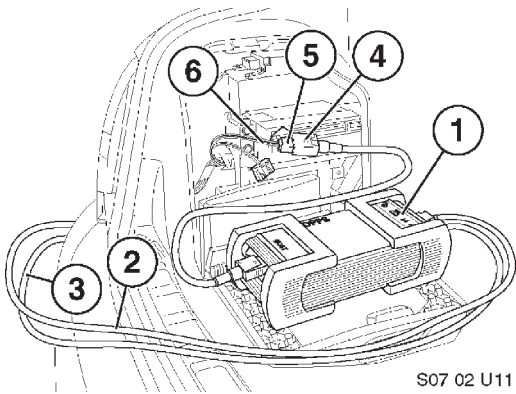
Note: This is a crucial step and must not be ignored. Failure to complete this step will result in incorrect readings and results.
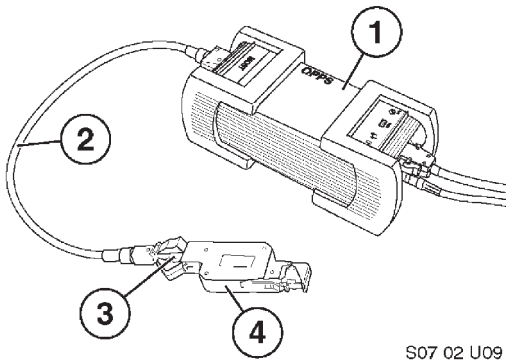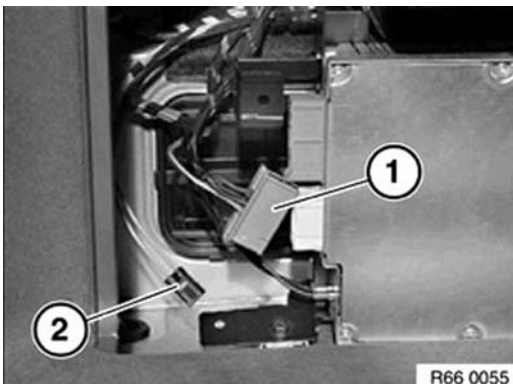
Control Module Testing

- Next you are instructed to attach the MOST control unit cable P/N 663 122 (2) and the MOST test loop P/N 663 124 (4).

  This is a crucial step and must not be ignored. Failure to complete this step will result in incorrect readings and results.

- Remove the test loop

- Remove the SVS harness from the module

- Remove the fiber optical insert (4) from the SVS harness plug.

- Insert the free end of the MOST CM cable P/N 663 122 (5) into the SVS harness plug and plug the assembly into the SVS module.
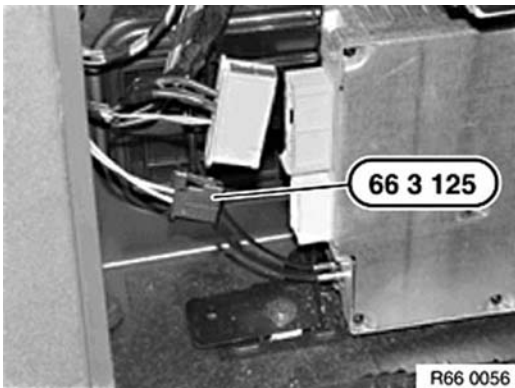
- Follow the DISplus/GT1 test module instructions.

S07 02 U09

S07 02 U10

Control Module Harness Testing

- Remove the test loop.

- Remove the SVS harness (6) from the module

S07 02 U11

- Remove the fiber optical insert (2) from the SVS harness plug (1)

R66 0055

W66 3 125

• Plug a MOST attachment housing P/N 663 125

66 3 125

R66 0056

• Into the MOST wiring harness

66 3 123

R66 0057
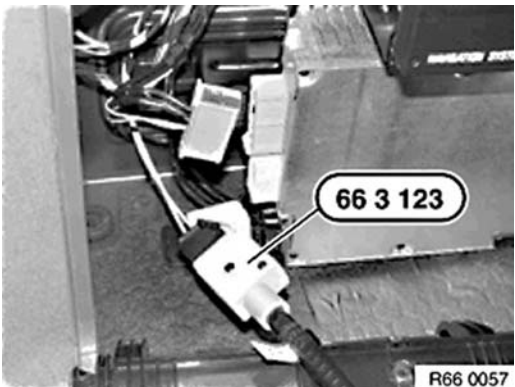
• Plug the free end of the MOST wiring extension cable into the MOST attachment housing.

• Follow the DISplus/GT1 test module instructions

Notes:

Review Questions

1. What is the OPPS Tool used for? _____

   _____

2. How is the GT1 battery recharged? _____

   _____

3. In what sequence must the three hardwire connection cables be attached between the
   diagnostic head and the GT1 control panel? _____

   _____

4. Where is the floppy disc drive located on the GT1? _____

5. What additional lead can be plugged into the Base Measurement connector shared with
   MFK 1 and MFK 2? _____

   _____

6. What is the procedure for configuring the Optical Keyboard when more than one GT1 is
   used in the workshop? _____

   _____

   _____

7. What does an orange glowing "operation" LED on the GT1 indicate? _____

   _____

8. List the uses of the following OPPS OBD cables:

   • The short cable #663 111 _____

   _____

   • The long cable #663 112 _____

   _____